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IOWA STATE UNIVERSITY EQUIPMENT PURCHASE

Action Requested: Approve Iowa State University's request to purchase a High Performance Computing Cluster (HPCC) for $1,712,902 million.

Executive Summary: Equipment purchases at the Regent institutions costing more than $1 million are required by Board policy to be approved by the Board of Regents.

Description of the Equipment

The HPCC:

- Consists of compute nodes, storage nodes, and the infrastructure to tightly integrate them. The infrastructure: (1) consists of racks to hold the nodes, industry standard clustering software, and high performance Infiniband networking; and (2) will support 300 compute nodes and 4 Petabytes of data;
- Has an architecture tuned to meet the high performance computing needs of science applications found at ISU; and
- Will become part of the central HPC operation at ISU and be supported by IT and research staff.

Justification of the Need for the Equipment

The University reports that:

- The HPCC is needed to support computationally-intensive research at ISU and will be available for general faculty use on a shared basis;
- Faculty, whose grants require intense computation, are currently either purchasing their own small clusters using limited research/general funds or are coordinating with others within their departments. These clusters support only modest levels of computation, but require significant personnel time to run;
- Colleges and departments would prefer to have infrastructure and management provided centrally. Several have directed money toward this purchase, rather than spend it to support many small clusters;
- Individual research teams will only need to purchase the nodes they need and not fund infrastructure and personnel costs;
- Access to a large cluster means that individual researchers can share the use of their nodes to reduce cost;
- Research faculty can acquire nodes of both types as needed to support the computational needs of their grants.
- Two research teams that each require computing power and memory of 20 nodes but only need it half of the time can each buy 10 nodes and share them, which reduces hardware and personnel costs; and
- Extending this across the University allows a greater level of sharing, improves computing efficiency, generates a commensurate savings, and allows the university to compete for larger grants with intensive computational requirements.

Any Known Alternatives to the Equipment Proposed

There are no known alternatives at this price and performance level.

A Request for Information (RFI) was conducted in March, 2014, to research the best available technology and pre-qualify vendors. After reviewing and assessing responses, a Request for Proposal (RFP) was issued in May with finalized specifications. The RFP was issued to 13 pre-qualified vendors who responded to the RFI in March or to previous HPCC RFPs. Bids were received in June, 2014.

ISU evaluated the proposals to identify the best solution and determine participation interest from colleges, departments, and researchers on campus. ATIPA Technologies was chosen because it met the RFP's technical requirements, scored the highest based on ISU's evaluation criteria, and was the lowest cost response.

Estimated Cost and Source of Funding

The final cost for the HPCC is $1,712,902 million. Funding will be provided from multiple sources including: $1,265,802 from college/general fund sources, $339,600 from departmental/foundation fund sources, and $107,500 from research/sponsored fund sources.

Board Policy: Chapter 7.06B(12) of the Regents Policy Manual requires that:

- Equipment costing more than $1,000,000 must be submitted to the Board for approval; and
- Requests submitted to the Board Office for approval must include the following information:
  - Description of the equipment;
  - Justification of the need for the equipment;
  - Any known alternatives to the equipment proposed; and
  - Estimated cost and source of funding.